

PATHOLOGY AND BACTERIOLOGY

UNDER THE CHARGE OF

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Fibrinemia.—J. O. WAKELIN BARRATT (*Jour. Path. and Bact.*, 1913, xvii, No. 3) has published an interesting article describing his attempts to find the cause of death when hemoglobin solution is injected into the blood stream. It has been known that a solution of hemoglobin from red blood cells of a rabbit, if injected in sufficient amount into the ear veins of another rabbit, would cause dyspnea, convulsions, and finally death. The fatal result is not supposed to be due to dissolved hemoglobin, but to substances derived from the stroma of the red blood cell. Morawitz, who some years ago advocated the transfusion of defibrinated blood in cases of anemia, recommended that such blood should be kept for some time before injection, so that the fibrin ferment might be modified to an inert substance; such precaution, nevertheless, was not always successful. It has been further observed that the fatal symptoms occur even if the serum was obtained from the animal in which the injection was made. Barratt first directed his attention to finding out if red blood cells laked by the addition of distilled water yielded thrombokinase, which he was able to answer in the affirmative. He was further able to determine that the thrombokinase thus supplied, comes almost if not entirely from the red blood cells; the solution of hemoglobin, therefore, whether in the form of laked red cells, or of supernascent liquid contains thrombokinase. If thrombokinase itself be injected, fibrin is separated slowly, which blocks the smaller bloodvessels, and can be found in the bloodvessels of the lungs; this can also be seen when thrombin is injected. The separation of fibrin in all cases is due to the action of thrombin, and according to the rapidity with which thrombin is formed, clotting occurs in the heart and the great bloodvessels, or in the capillaries, the latter being the case if the separation of fibrin occurs slowly. The symptoms produced appear to be entirely the result of mechanical interference with the circulation, and Barratt was able to find no evidence of a toxic effect produced by the fluid injected.

Secondary Infection in Pulmonary Tuberculosis.—AVERY and LYALL (*Jour. Med. Research*, 1913, xxviii, No. 1) deal with the subject of secondary infection and its importance in pulmonary tuberculosis. They point out that there are three schools whose opinions differ upon this subject. They first consider that mixed infection plays no essential part in the progress of the disease, a view held by v. Leyden, Straus, Fraenkel, and others; the second group, among which are to be found adherents of the Koch school, Cornet, and others, considers that the lesions and the more severe symptoms of pulmonary tuber-

culosis are due to the secondary and not to the primary infection; the third school, in which are Baldwin, Marmorek, and Römer, considers that the lesions and symptoms may be caused by the tubercle bacillus alone, but in many cases severe symptoms and unfavorable progress are due to secondary infection. Necessarily in such a division of opinion, it is essential to closely define terms, and it may be said that most observers consider that the organisms which are accidental incomers from the air are not properly to be considered as secondary infecting agents, unless they actually invade the blood or the tissues. Avery and Lyall point out that some of the Koch school have receded from their first position, being compelled to recognize that the tubercle bacillus alone is able to cause fever, and that destruction of lung tissue can be brought about without the assistance of secondary infection. Baldwin and Marmorek have shown the power of the tubercle bacillus to cause lesions quite unaided by any other microbe, but on the other hand, such lesions progress more rapidly and more dangerously in the presence of secondary infections. Avery and Lyall examined very carefully the sputum of 5 bronchiectasis cases, and of 15 cases of pulmonary tuberculosis, isolating and identifying the organisms present. The bacteria found differed so little from those reported by Hastings and Niles in non-tuberculous diseases of the respiratory tract, that they felt it impossible to draw useful inferences from this part of the investigation. They made blood cultures in 5 cases of bronchiectasis, and 110 cases of pulmonary tuberculosis, of which 38 were far advanced in the disease; in no case were they able to demonstrate a secondary bacteriemia.

Chemical and Serum Therapy in Pneumococcus Infections.—ENGWER (*Zeit. f. Hygiene u. Infek.*, 1912, lxxiii, Heft 2) has experimented with infective doses of varying strength of pneumococcus, and attempted to meet the disease by combinations of chemical and serum therapy; he has attained a certain degree of success. He has used a solution in oil of ethylhydrocuprein and finds it effective in pneumococcus infection of the mouse and the guinea-pig; while with certain degrees of infection all the control animals died, he was able to save a certain number of animals by treatment. His best results were obtained by a combination of this chemical therapy with the usual serum therapy, although under certain circumstances the two appear to be antagonistic instead of mutually helpful. Throughout the experiments some animals were found to be poisoned by the chemical, and such fatal results appeared to be greater in cold weather. Engwer considers that the action of the drug depends upon the actual destruction of the pneumococci outside the cells rather than upon any action obtained by phagocytosis.

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